

NOT MEASUREMENT
SENSITIVE

MIL-HDBK-245C
10 SEP 1991

SUPERSEDING
MIL-HDBK-245B
1 JUNE 1983

MILITARY HANDBOOK

PREPARATION OF STATEMENT OF WORK (SOW)



AMSC N/A

FSA MISC

Distribution Statement A. Approved for public release; Distribution is unlimited.

19960807 031

DTIC QUALITY INSPECTED 1

DEPARTMENT OF DEFENSE
Washington, D.C. 20360

MIL-HDBK-245C

Preparation of Statement Of Work (SOW)

10 Sep 1991

1. This standardization handbook was developed by the Space and Naval Warfare Systems Command in accordance with established procedures.

2. This publication was approved on 10 Sep 1991 for printing and inclusion in the military standardization handbook series.

3. This document covers the preparation of Statements Of Work (SOW) for inclusion in Department of Defense solicitations and contract documents.

4. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Space and Naval Warfare Systems Command, Attn: SPAWAR 211C, Washington, D.C. 20363-5100 by using the Standardization Document Improvement Proposal (DOD Form 1426) appearing at the end of this handbook or by letter.

FOREWORD

This handbook provides guidance to enable personnel to create a completed contract Statement Of Work (SOW) applicable to any material acquisition life-cycle phase. It also covers the SOW preparation for non-personal services contracts.

Weapon systems of the 90's contain many more specifications and require much greater detailed SOWs than those of the past. Contrast the Army Signal Corps SOW for the Wright Brothers' heavier-than-air flying machine in 1908 to the Air Force SOW for the Advanced Tactical Fighter in 1986. Requirements in the 1908 SOW (e.g., be easily taken apart for transport in Army wagons and be capable of being reassembled for operation in an hour, carry 350 pounds for 125 miles, and maintain 40 miles per hours in still air) and other contract conditions were specified on one page. The requirements section in the 1986 SOW for the Air Force Advanced Tactical Fighter is 85 pages long with 300 paragraphs of requirements. Today's SOWs are much more complex requiring greater attention to detail.

The handbook is organized so that the SOW writer after reviewing and familiarizing himself with Section 3, General Description, can proceed to that portion of Section 4, Detailed Requirements, that pertains to the type of SOW required. Each portion of Section 4 has detailed instructions on the specific requirements for each type of SOW tailored to specific needs. The specific instructions provide techniques for defining task elements, and a method for organizing these elements into a comprehensive SOW. Sample outlines and significant DO's and DONT's are provided.

The tendency of SOW writers is to include requirements which belong in other parts of a government contract. Contract requirements should be specified in Sections A - M and should not be restated in other parts of the contract. Quantitative technical requirements should be specified in the specification and not be restated in other parts of the contract. Work requirements should be specified in the SOW, and all requirements for delivery, format, content, etc., of technical data should be in the contract data requirements list (CDRL) or data item description (DID) respectively, with none of the requirements restated in other parts of the contract. Redundancy invites conflict.

CONTENTS

| | Page |
|---|------|
| 1 SCOPE | 1 |
| 1.1 Background | 1 |
| 1.2 Importance of SOW | 1 |
| 2 REFERENCE DOCUMENTS | 2 |
| 2.1 Specifications, Standards and Handbooks | 2 |
| 2.2 Other Government Documents, Drawings and Publications | 2 |
| 3 GENERAL DESCRIPTION | 4 |
| 3.1 Purpose | 4 |
| 3.2 Relationship between Statement of Work and Specification | 4 |
| 3.3 Relationship Between the SOW and Contract | 4 |
| 3.4 SOW and Contractor Performance | 5 |
| 3.5 Relationship of Contract Sections | 5 |
| 3.6 Standard Format | 7 |
| 3.6.1 SOW Section 1 - Scope | 7 |
| 3.6.2 SOW Section 2 - Reference Documents | 7 |
| 3.6.3 SOW Section 3 - Requirements | 8 |
| 3.6.4 SOW Do's and Don'ts | 8 |
| 3.6.5 Title Page and Table of Contents | 10 |
| 3.6.6 Paragraph Numbering and Identification | 10 |
| 3.6.7 Language Style | 10 |
| 3.7 Data Management | 13 |
| 3.7.1 Use of Contract Data Requirements List (CDRL) Data | 13 |
| 3.7.2 Data Item Description (DID) | 13 |
| 3.8 SOW Development | 15 |
| 3.8.1 Work Breakdown Structure | 15 |
| 3.8.2 Development Approach | 15 |
| 3.8.3 Non-Complex SOW Development | 18 |
| 4 DETAIL REQUIREMENTS | 19 |
| 4.1 SOW Types | 19 |
| 4.2 Concept Exploration Phase (SOW Type 0) | 19 |
| 4.2.1 Elements of Information | 19 |
| 4.2.2 Requirements | 21 |
| 4.3 Demonstration and Validation (D&V) Phase (SOW Type I) | 21 |
| 4.3.1 Detailed Requirements | 21 |
| 4.4 Engineering and Manufacturing Development Phase (SOW Type II) | 22 |
| 4.5 Production and Deployment Phase/ Operation and Support (SOW Types III & IV) | 22 |
| 4.5.1 Product Specifications | 22 |
| 4.5.2 Examples | 23 |
| 4.6 Non-personal Services (SOW Type V) | 23 |
| 4.6.1 Product Definition | 25 |
| 4.6.2 Terminology | 25 |
| 4.6.3 Word Usage | 25 |
| 4.6.4 Other Documents | 26 |

| | | |
|------------|---------------------------------------|----|
| Appendix A | Acronyms | 27 |
| Appendix B | Work Words/Product Words | 28 |
| Appendix C | Phrases Having Multiple Meanings | 31 |
| Appendix D | Case Study | 33 |
| Appendix E | Education Courses and Automated Tools | 36 |
| Appendix F | Example SOW | 37 |
| Appendix G | Example Type V SOW | 42 |

Figures

| Figure | | Page |
|--------|--|------|
| 1 | Relationship of Contract Sections to SOW | 6 |
| 2 | Sample Title Page | 11 |
| 3 | Sample Table of Contents | 12 |
| 4 | SOW-CDRL-DID Relationship | 14 |
| 5 | A Systematic Approach to SOW Preparation | 16 |
| 6 | SOW Types | 20 |
| 7 | SOW Format | 24 |

1.0 SCOPE

1.1 Background. This handbook applies to the preparation of Statements of Work (SOWs) for projects and programs that have deliverables and/or services performed. It covers the preparation of five types of SOWs which correlate to the acquisition life cycle phases identified in DoDI 5000.2 and an additional type to cover nonpersonal services contracts (See Section 4). This handbook is for SOWs in Department of Defense (DoD) solicitations and contracts and covers not only work requirements, in conjunction with applicable performance/design requirements contained in specifications, but also data deliverables contained in Contract Data Requirements Lists (CDRLs). The Federal Acquisition Regulations (FAR) and DoD Federal Acquisition Regulation Supplements (DFARS) discuss the essentiality of the SOW for sound contracting. An offeror submits a proposal based on his perception of the Government's needs as defined by the SOW. Precisely stated SOW requirements will enable the contractor and Government to negotiate a fair price for the goods or services to be provided. This handbook has been developed as a framework to assist the responsible manager in providing a consistent, orderly, and complete description of work required.

1.2 Importance of SOW. The majority of government contracts include a SOW which forms the basis for successful performance by the contractor and effective administration of the contract by the government. A well-written SOW enhances the opportunity for all potential offerors to compete equally for Government contracts and serves as the standard for determining if the contractor meets the stated performance requirements. Appendix D provides case studies which illustrate the importance of a properly established SOW.

2. REFERENCE DOCUMENTS

2.1 Specifications, Standards and Handbooks. The following Specifications, standards, and handbooks form a part of this handbook to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of specifications and Standards (DODISS).

SPECIFICATIONS

MILITARY

MIL-T-31000

General Specification for Technical Data Packages.

MIL-S-83490

Specifications, Types And Forms

STANDARDS

MILITARY

MIL-STD-490A

Specification Practices

MIL-STD-881

Work Breakdown Structures For Defense Material Items

MIL-STD-961

Military Specifications and Associated Documents, Preparation of

MIL-STD-1388-1A

Logistic Support Analysis

MIL-STD-1521B

Technical Reviews and Audits for Systems, Equipment, and Computer Software

HANDBOOKS

MILITARY

MIL-HDBK-248

Acquisition Streamlining

2.2 Other Government Documents, Drawings and Publications. The following Government documents, drawings and publications form a part of this Handbook to the extent specified herein:

REGULATION

DEFENSE FEDERAL ACQUISITION REGULATION

DFAR 210.002

Policy, Specifications, Standards, and other Purchase Descriptions

DFAR 210.004

Selecting Specifications or Descriptions of Use

DFAR 211

Acquisition and Distribution of Commercial Products

DFAR 227.472

Acquisition Policy for Technical Data and Rights in Technical Data

DFAR 237.104

Service Contracting

Personal Services Contracting

DFAR 252.210-7005

Acquisition Streamlining

MANUAL

DEPARTMENT OF DEFENSE

DoDD 4105.62

Selection of Contract Sources for Major
Defense Systems

DoD 5010.12

Acquisition Management Systems and Data
Requirements Control List (AMSDL)

DIRECTIVES

DEPARTMENT OF DEFENSE

DoDD 5000.1

Defense Acquisition

DoDI 5000.2

Defense Acquisition Management Policies
and Procedures

DoD 5000.2-M

Defense Acquisition Management
Documentation and Reports

FORMS

DEPARTMENT OF DEFENSE

DD Form 1423

Contract Data Requirements List (CDRL)

DD Form 1664

Data Item Description (DID)

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

3. GENERAL DESCRIPTION

3.1 Purpose. The SOW should specify in clear, understandable terms the work to be done in developing or producing the goods to be delivered or services to be performed by a contractor. Preparation of an effective SOW requires both an understanding of the goods or services that are needed to satisfy a particular requirement and an ability to define what is required in specific, quantitative terms. A SOW prepared in explicit terms will enable offerors to clearly understand the government's needs. This facilitates the preparation of responsive proposals and delivery of the required goods or services. A well-written SOW also aids the Government in conduct of the source selection and contract administration after award. The Data Requirements Review Board (DRRB) may review each SOW to ensure compliance with the policy, guidance and procedures contained in this handbook. The following SOW types are aligned with the acquisition milestones and phases in DODD 5000.1, and are discussed in detail in section 4.

| <u>SOW Type</u> | <u>Application</u> |
|-----------------|--|
| 0 | Concept Exploration and Definition |
| I | Demonstration and Validation |
| II | Engineering and Manufacturing Development |
| III/IV | Production and & Deployment/Operations & Support |
| V | Non-personal Service |

3.2. Relationship between Statement Of Work and Specification. The SOW defines (either directly or by reference to other documents) all non-specification requirements for contractor effort. Qualitative and quantitative design and performance requirements are contained in specifications developed in accordance with MIL-STD-490 or MIL-STD-961. Such specifications are typically referenced in the SOW, but the specific qualitative or quantitative technical requirements shall not be spelled out in the SOW. For example, the referenced specification may cite reliability and maintainability requirements in terms of quantifiable mean-time-between-failures (MTBF) and mean-time-to-repair (MTTR); the SOW should task the contractor to establish, implement and control a reliability and maintainability program.

3.3 Relationship Between the SOW and Contract. The SOW shall be compatible with these provisions:

Requirements that are not mandated by law or established DoD policy and that do not contribute to the operational effectiveness and suitability of the system, or effective management of its acquisition, operation, or support shall be excluded.

At the outset of development, system-level requirements shall be specified in terms of mission-performance, operational effectiveness, and operational suitability.

During all acquisition phases, solicitations and contracts (SOWs and the Specification) shall state management requirements in terms of results needed rather than "how to manage" procedures for achieving those results.

DFAR 252.210-7005 Acquisition Streamlining should be a considered reference for Section G, General Provisions of the contract. This enables a contractor to effectively evaluate and recommend the tailored application of management systems and specifications and standards, for use in the appropriate phase of the program life cycle.

3.4 SOW and Contractor Performance. After contractor selection and contract award, the contract SOW becomes a standard for measuring contractor performance. Consequently, the SOW writer must consider the contractual/legal implications of the SOW during its preparation. As the contracted effort progresses, the government and the contractor will refer to the SOW to determine their respective rights and obligations. In this respect, the SOW defines the contract and is subject to the interpretations of contract law. The SOW must clearly define the work to be performed, since the language detailing the contractor's effort may be pertinent to legal questions concerning the scope of work. In a dispute concerning performance, rights, or obligations, clearly defined requirements will enhance the legal enforceability of a SOW.

3.5 Relationship of Contract Sections. The government Request for Proposal (RFP) or solicitation defines the government's requirements and constitutes the cornerstone of the program, as it ultimately becomes the contract. Therefore, the SOW must be consistent with all sections of the RFP. The SOW preparer should work closely with the overall RFP drafter and all contract section authors to achieve consistency. If acceptance and inspection of supplies or services is required to satisfy the contract, RFP Section E should address the acceptance criteria. Data deliverables are described in Contract Data Requirements Lists (CDRL's) exhibits to the contract. Section F (Deliveries or Performance) requires delivery of data IAW these exhibits. Clauses required by law, regulation, or any other clauses that may apply to a resulting contract are cited in Section I (Contract Clauses). Section J is a listing of all attachments to the contract. Sections K, L, and M apply only to RFP's. They are contained at the end so that when the contract is awarded, they can be removed. Section K includes provisions that require representations, certifications, or the submission of other information by offerors. Section L includes provisions and other information or instructions to guide bidders/offerors in preparing their offers or bids in accordance with the SOW and in a manner that is responsive to the governments RFP. Section M identifies the factors that will be considered in awarding the contract. It contains the evaluation criteria listed in order of importance and other factors for award. Utilize the SOW and WBS in preparing the corresponding CDRL, Section L, Section M and other parts of the RFP/contract. The relationship of RFP/contract sections to the SOW is illustrated in Figure 1.

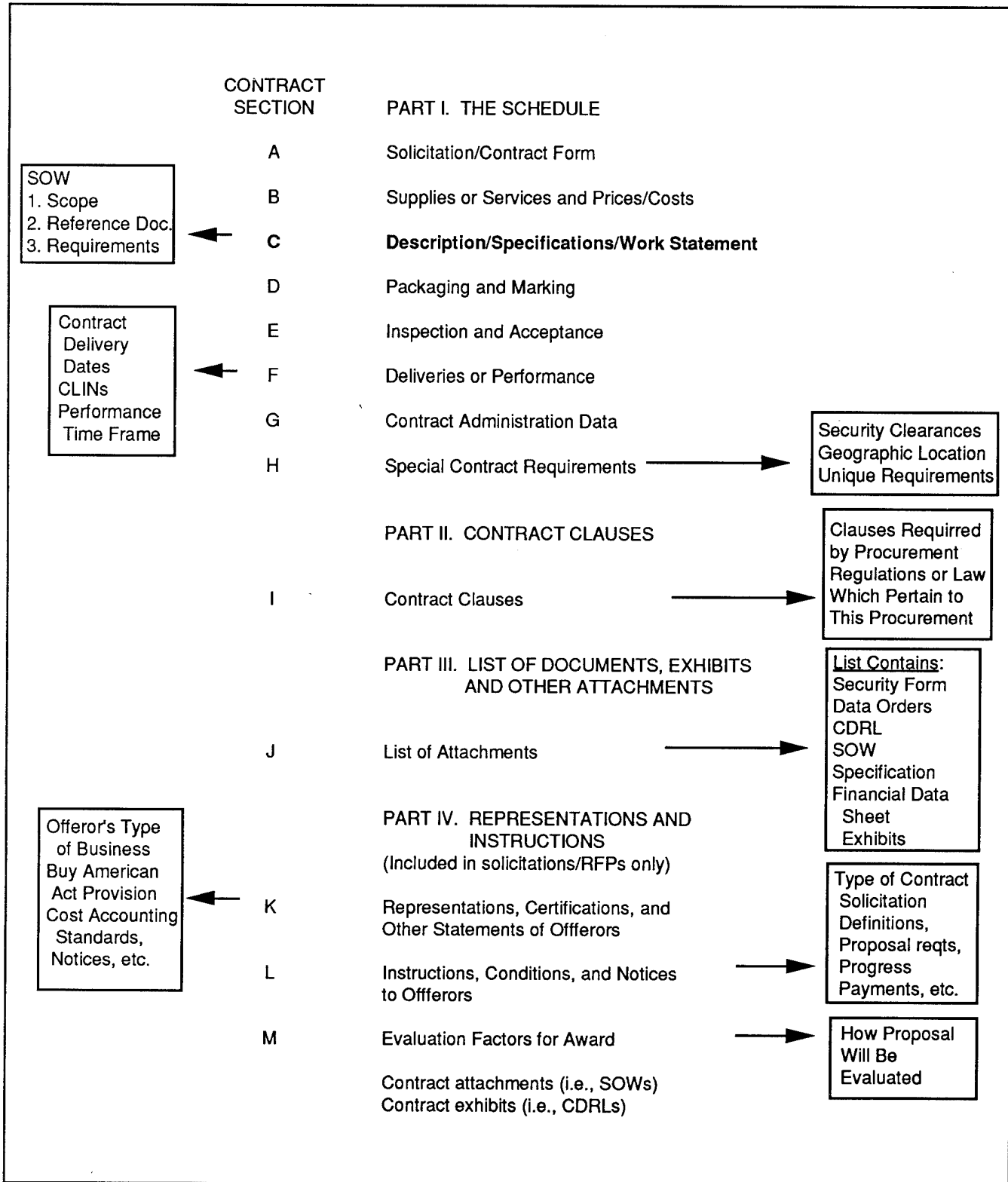


Figure 1. Relationship of Government Solicitation/Contract Sections to SOW

3.6 Standard Format. The standard format for the SOW is as follows (subject to variations specified in Section 4 for specific types of SOWs):

| <u>SOW Section</u> | <u>Title</u> |
|--------------------|----------------------|
| 1 | SCOPE |
| 2 | APPLICABLE DOCUMENTS |
| 3 | REQUIREMENTS |

Deviations from the standard format may be made by the writer when necessary to accommodate overriding program needs. Additional information and exceptions related to the standard format are provided in 3.6.1 through 3.6.7.

3.6.1 SOW Section 1 - Scope. This section includes a brief statement of what the SOW does and does not cover. The scope paragraph defines the breadth and limitations of the work to be done. In some cases, particularly the Type 0 SOW (Concept Exploration and Definition Phase), the use of an introduction, background, or both, is preferred. Separate indentures under this section are used in SOWs to accommodate complex acquisitions requiring lengthy background information. Background information should be limited to only that information needed to acquaint the proposer with the basic acquisition requirement. The items listed below shall not be included in the "Scope" section.

- a. Directions to the contractor to perform work tasks.
- b. Specification of data requirements.
- c. Description of deliverable products.

3.6.2 SOW Section 2 - Applicable Documents. Military handbooks, government instructions, service regulations, technical orders, and policy letters, as a type, are not written in language suitable for contract application. In the event requirements of these documents must be included in a SOW task, excerpts only shall be used and then be made a declarative or the document shall be clearly referenced as guidance only, and not for contract compliance.

The SOW writer should refer to DFAR 252.210-7005 with respect to referenced documents and begin with a zero base situation. The requirement for any specification and standard shall be justified before being placed in Section 2 of the SOW. Therefore, Section 2 should not be prepared until the draft of the requirements section, Section 3, is complete. Sections 2 and 3 are reciprocal. Documents invoked by specific reference in Section 3 of the SOW must be identified and listed in Section 2. When invoked in section 3 of the SOW, the application shall be tailored to meet minimal needs in accordance with the "Application and tailoring of Military Specifications and Standards" section of MIL-HDBK-248. The applicability of each document listed in Section 2 of the SOW shall be specified in Section 3 and identify only that portion needed to perform the work. Improper document referencing (e.g., blanket imposition) has often been a major cost driver since total compliance with a document listed in Section 2 is implied unless Section 3 specifies otherwise. Reference to guidance documents should be avoided except in a Type V SOW (see paragraph 4.6).

3.6.3 SOW Section 3 - Requirements. Specific work tasks are called for in SOW Section 3 (see appendix D). These tasks, developed to satisfy program needs, are essentially the contractor work requirements. Although the Source Selection Evaluation Board (SSEB), under provisions of DODD 4105.62, is responsible for the examination of SOW requirements in order to eliminate nonessential requirements, such examinations may be accomplished by the functional engineering/technical groups during development of the SOW. A well-written SOW has the following attributes:

a. Specifies requirements clearly to permit the government and offerers to estimate the probable cost and the offeror to determine the levels of expertise, manpower, and other resources needed to accomplish the task.

b. States the specific duties of the contractor in such a way that the contractor knows what is required and completes all tasks to the satisfaction of the contract administration office.

c. Written so specifically that there is no question of whether the contractor is obligated to perform specific tasks.

d. References only the minimal applicable specifications and standards pertinent to the tasks. Selectively invokes documents only to the extent required to satisfy the existing requirements. (The tailoring of reference document requirements should result in a reduction to the overall costs otherwise incurred if all requirements stated in a document are invoked).

e. Cites only the minimal applicable specification and standards, in whole or in part, and is tailored or scoped downward to limit cost drivers.

f. Separates general information from direction so that background information and suggested procedures are clearly distinguishable from contractor responsibilities.

3.6.4 SOW Dos and Don'ts

a. Do's:

- Select a competent team, with a team leader who is experienced in systems acquisition and SOW development.
- Use the program Work Breakdown Structure (WBS), as discussed in paragraph 3.8.1 in this handbook to outline the required work effort.
- Set SOW objectives in accordance with the Acquisition Plan (AP), if applicable.
- Explicitly define the tailored limitations of the military standards and specifications cited.

- Identify either Contract Data Requirements List (CDRL) number or Data Item Description (DID) in parentheses immediately following SOW paragraph/requiring task deliverable data.
- Exclude design control or hardware performance parameters. An exception would be a TYPE I SOW, (see paragraph 4.3) when a Type A system/segment specification (in accordance with MIL-STD-490) is not provided.
- Specify that the contractor format is acceptable for the data product when it meets your needs.
- Require only minimum essential data and use the least intrusive means to obtain it.
- Educate personnel with respect to acquisition streamlining. (See DFAR Part 210.004 Selecting Specifications or Descriptions for Use).
- Give priority to commercial items over specification items when the former satisfies military requirements.
- Give priority to commercial practices as a means of acquisition (see DFAR Part 211 Acquisition of Commercial Products).

b. Don'ts:

- Order, describe, or discuss Contract Data Requirements List (CDRL) data.
- Invoke, cite, or discuss a Data Item Description (DID). Although the text of the SOW tasks shall not include the data format and content preparation instructions and/or data delivery requirements, a data item description number listed on the CDRL may be cross-referenced in the SOW.
- Specify technical proposal criteria or evaluation factors.
- Establish a delivery schedule. (May include significant milestones for clarity.)
- Specify design control parameters or the performance of hardware, except in a Type I SOW (see paragraph 4.3) when a Type A system/segment specification is not provided.
- Impose on the contractor a Government format when a contractor format is acceptable.
- Over specify. Specify what is required and let the contractor find out the best method to fulfill the requirement.

- Invoke in-house management instructions. (Exception: Type V SOW's (see paragraph 4.6) may invoke in-house management instructions in connection with work to be accomplished by a non-personal services contractor.)
- Use the SOW to establish or amend a specification.
- Invoke handbooks, service regulations, technical orders, or any other document not specifically written in accordance with MIL-STD-961/962 requirements.

3.6.5 Title Page and Table of Contents. All SOWs should have a title page or cover. Included should be the SOW title, preparation date, procurement request number/contract number, revision number, date, and the identity of the preparing organization. Figure 2 is a typical title page layout. A table of contents should also be used when the SOW exceeds five pages and should follow the title page in a format similar to that depicted in Figure 3.

3.6.6 Paragraph Numbering and Identification. Each paragraph and subparagraph shall be numbered consecutively within each SOW section using a period to separate the number representing each sublevel. Paragraph numbering should be limited to the third sublevel, if possible, as shown in the following example for SOW Section 3:

| | |
|--------------|---------|
| Requirement | 3 |
| 1st Sublevel | 3.1 |
| 2nd sublevel | 3.1.1 |
| 3rd Sublevel | 3.1.1.1 |

Paragraph breakdowns should be kept to that level necessary to clearly define required contractor tasks. Only one task should be provided in a numbered paragraph or sub paragraph to facilitate costing, referencing and tailoring of tasks. Each paragraph and subparagraph shall be titled.

3.6.7 Language Style. SOW requirements should be written in language understandable to all potential offerors. Work requirements should be stated explicitly in a logical, chronological order, avoiding words which allow for multiple interpretations. Use technical language sparingly with simple wording predominating in concise sentences. Use "shall" whenever a provision is mandatory. "Will" expresses a declaration of purpose or intent; for example, "The ship will provide power to the equipment". Use active rather than passive voice; for example, "The contractor shall establish a program", not "A program shall be established by the contractor".

Use verbs that identify work and task requirements (See Appendix B) and answer the explicit question: "What are the work requirements?" When selecting the appropriate work word which properly expresses the degree of contractor involvement, the SOW writer must explicitly define the total nature of the work requirement.

10 SEP 1991

STATEMENT OF WORK
FOR
RAPID DEPLOYABLE COMMUNICATIONS SYSTEM

Prepared by
SPACE AND NAVAL WARFARE SYSTEMS COMMAND
SPAWAR 20

Figure 2. Sample title page.

| TABLE OF CONTENTS | | |
|-------------------|--|------|
| Section/Para | | Page |
| 1 | Scope | |
| 2. | Referenced documents | |
| 2.1 | Military specifications | |
| 2.2 | Military standards | |
| 2.3 | Other publications | |
| 3 | Requirements | |
| 3.1 | General Requirements | |
| 3.2 | Technical Objectives and Goals (Type I SOW only) | |
| 3.3 | Specific Requirements | |
| 3.3.1 | Contractor Services | |
| 3.3.2 | Integrated Logistics Support | |
| 3.3.3 | Management Systems Requirements | |
| 3.3.4 | Production Planning for Phase II | |
| 3.3.5 | Reliability Program | |
| 3.3.6 | Maintainability Program | |

Figure 3. Sample table of contents.

Avoid using "Any," "Either," "And/Or," as these words imply that the contractor can make a choice which may not be in accordance with the intent of the SOW. Do not use pronouns. Repeat the noun to avoid any misinterpretation. Terminology should be consistent throughout the SOW. When referring to a particular item, use the same phrase or word, particularly when referring to technical terms and items. Where words can be spelled in several different ways, employ the most common spelling. Make every effort to avoid ambiguity. A list of ambiguous phrases is provided in Appendix C.

Finally, spell out acronyms and abbreviations the first time and put the abbreviated version in parentheses after the spelled-out phrases. This will define them for each subsequent use. Acronyms and abbreviations may be defined in a glossary.

3.7 Data Management. As the contractor performs and completes the SOW tasks, data may be developed. Submissions of this data are generally expensive. Proper tailoring and scheduling of data submission items requires particular attention by the SOW preparers. Data costs can be minimized by selectively eliminating unnecessary reports and requiring appropriately phased submissions. A review of anticipated data requirements should therefore include definition of a time line defined for data submission. The contractor's format may be the acceptable form for submission of data products. The SOW preparer should make every effort to ensure that the CDRLs and DIDs reflect the anticipated need for data and determine early if the specific data called for will in fact be generated prior to stated delivery dates.

3.7.1 Use of Contract Data Requirements List (CDRL) Data. The ordering and delivery of data which the Government desires to retain is defined and scheduled through the use of the Contract Data Requirements List (CDRL), DD Form 1423, in conjunction with the appropriate Data Item Description (DID), DD Form 1664. The DID is issued to both describe the data and describe the preparation format and arrangement. The CDRL is used to order the data required and tailor the DID. The SOW task(s) that will produce data requirements shall be referenced in Block 5 of the CDRL description. The SOW author should exercise considerable care and attention to the data delivery implications of the SOW. While data may be inherently generated by a work task, recording and delivering the data in a specific format are cost drivers that must be considered when preparing the SOW and CDRLs. The CDRL should specify that the contractor's format is acceptable, wherever possible.

3.7.2 Data Item Description (DID). After the need for recording and delivery of data resulting from a work task has been determined, appropriate DIDs should be selected from DoD 5010.12, Vol II, Acquisition Management Systems and Data Requirements Control List (AMSDL). If certain elements of data are not needed, the DID shall be tailored downward noting deletions in CDRL Block 16. When it meets the government's needs, the contractor format for data products must be specified in Block 16 of the CDRL. The DID should not require data not specifically generated in the SOW work task. The SOW, and not the DID, must task the contractor to perform work. In parentheses at the end of each SOW task paragraph, identify the DIDs that would be generated from the effort described in the task, e.g. (DI-T-3714, DI-R-3718, etc.)

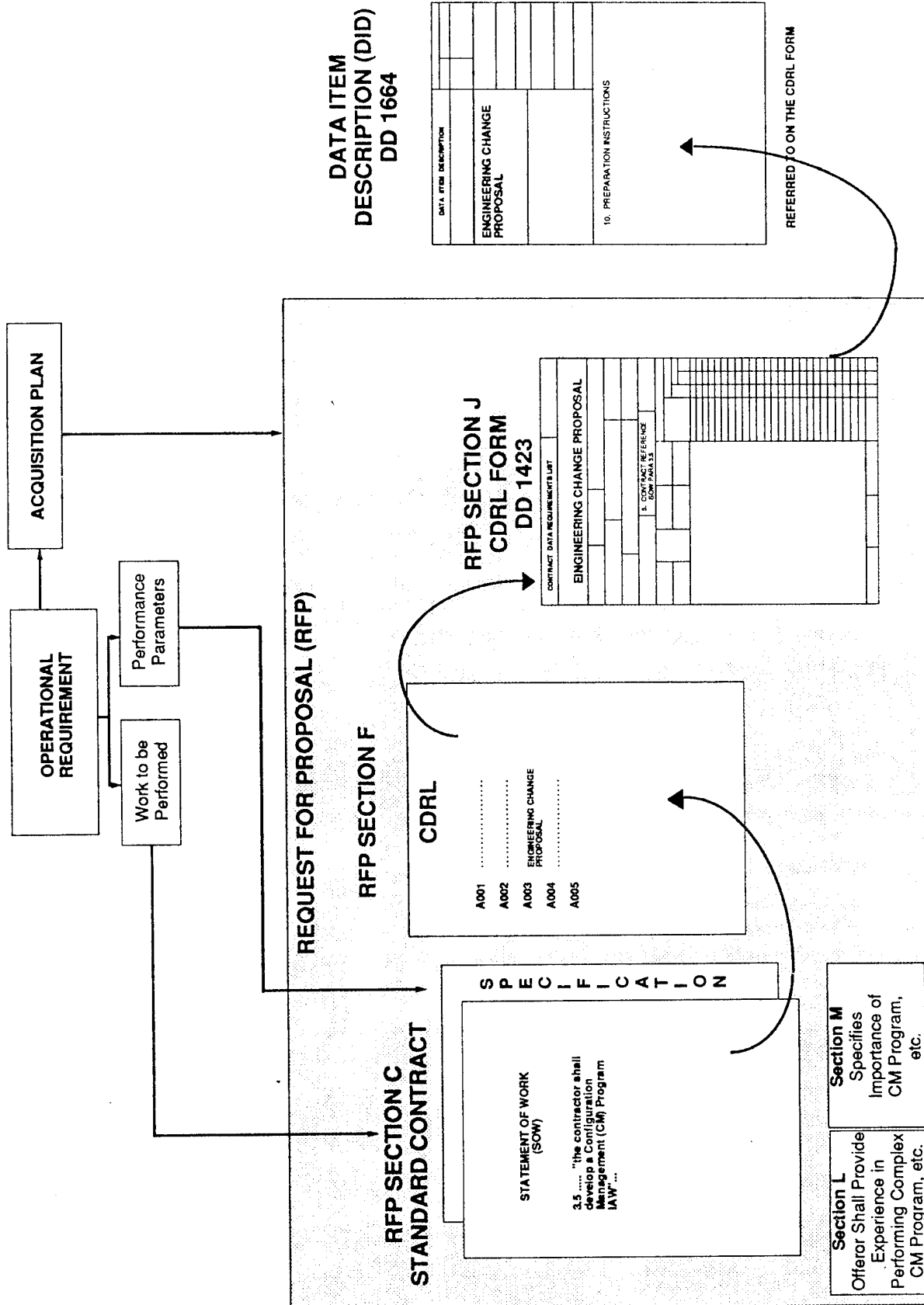


Figure 4. SPEC-SOW - CDRL - DID Relationship

To understand the relationship of a SOW to the CDRL and DID (see Figure 4), consider the example where the SOW establishes a requirement that, "the contractor should establish, implement and control a Configuration Management (CM) program. The associated CDRL could order an Engineering Change Proposal while the DID would provide the format and specific items to be included in or excluded from the change proposal that would affect the CM program. The CDRL specifies the frequency for data delivery but may also call for deferred ordering. For example, a CM program plan normally scheduled for completion six months after contract award may be postponed until one year after contract award.

3.8 SOW Development. Section 4 of this handbook describes how the SOW content may change depending on which acquisition phase it supports. This section will describe a general planning and development approach that is applicable to all SOWs regardless of which acquisition phase is to be supported.

3.8.1 Work Breakdown Structure (WBS). A WBS as defined by MIL-STD-881 shall be used in developing the SOW. A WBS provides the framework for a disciplined approach of structuring and defining the total project or program. It is a product-oriented family tree composed of equipment, services, and other items which make up the project or program, and provides the basis for progress reporting, performance and engineering evaluations, and financial data reporting. When preparing the SOW a complete application of a WBS as described in MIL-STD-881 may not be necessary in all programs, however, the underlying philosophy and structured approach can and shall be applied. The Contract Line Item Number (CLIN) and the SOW should be constructed to correlate with the WBS. Use of a WBS during SOW development facilitates a logical arrangement of the SOW elements and provides a convenient check-list to trace all necessary elements of the program and ensure that they are addressed in the SOW. The WBS will evolve into greater detail as the system definition and acquisition phases advance. For each phase, the WBS must be in sufficient detail to cover all the required work in that phase, as well as to produce the technical information needed for the next phase. The WBS may be tailored to the minimum level required for program control.

3.8.2 Development Approach. A systematic process is essential for SOW development. Select a competent team (expert in managerial, technical and contractual fields) with a team leader who is experienced in systems acquisition and SOW development. The SOW preparer and all contract section authors must first understand all program requirements to be supported. Following the systematic process shown in Figure 5, the team should:

- a. Follow DFAR 210.002 policy and MIL-HDBK-248 on acquisition streamlining to ensure that only those requirements which add value to the product, whether a management system or technical requirement, are included in the SOW.

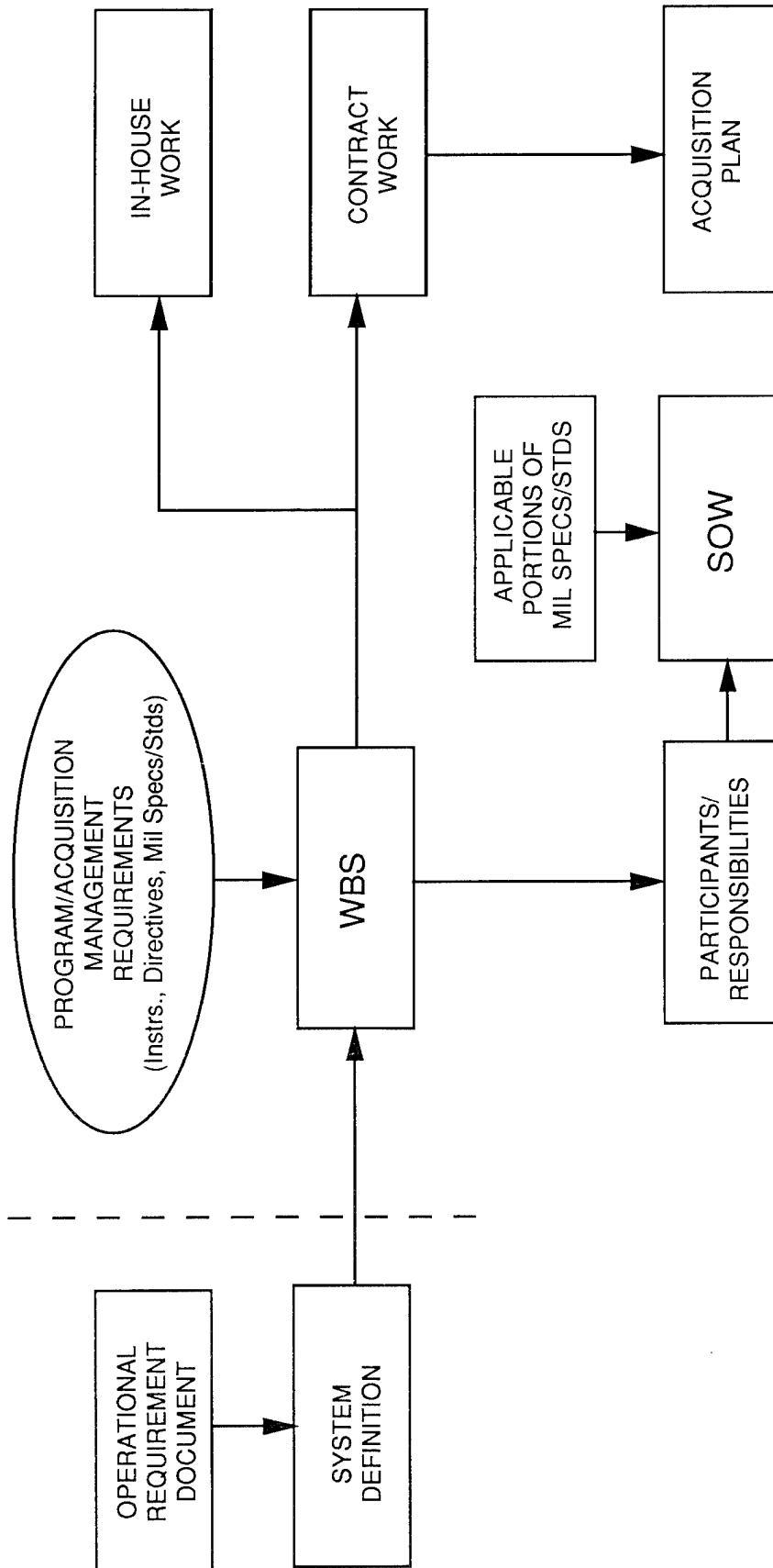


FIGURE 5. A SYSTEMATIC APPROACH TO SOW PREPARATION

- b. Pursuant to Public LAW 100-180, Section 824(b) of the FY90-91 National Defense Authorization Act (or the DFAR when written), enable commercial practices to be used as an acquisition strategy for NDI/COTS and military products.
- c. Review the requirement documents which authorize the program and define its basic objectives, such as an Operational Requirement Document (ORD), Program Objectives Memorandum (POM), Integrated Program Summary (IPS), and Acquisition Strategy Report (ASR).
- d. Review the various DoD/Services/Joint Services requirements documents for program management, acquisition, and control (such as DODD 5000.1 and DODI 5000.2 for weapon system acquisition, and other applicable instructions and military specifications and standards for reliability, configuration management, safety, test and evaluation, and integrated logistic support).
- e. Prepare a bibliography citing the specific portions of all applicable governing instructions, directives, specifications, and standards with which the program must comply. Keep these requirements to the absolute minimum.
- f. Categorize the work described by the program WBS into that which will be done in-house and that which needs to be contracted.
- g. Compile all work that needs to be contracted into an Acquisition Plan (if applicable) which will identify the various RFPs/contracts required, type of contract, the time-phasing, estimated cost, method of contractor selection/award, and period of performance among other things. For each RFP/contract so identified, a SOW must be prepared covering all of the WBS work elements included in that RFP/contract.
- h. Identify all organizations and persons who will participate in preparing the SOW, and determine the participants' areas of responsibility.
- i. Prepare the SOW following the guidelines of this handbook for each WBS work element, citing only the applicable portions of referenced Military Specifications and Standards, as appropriate, to satisfy the minimal needs of the program and identify deliverables needing CDRLs.
- j. Prepare the system specification using MIL-STD-490A and MIL-STD-961 as guidance to ensure that the specifications are consistent with the SOW. Ensure system/subsystem requirements are properly contained in the system specification and not in the SOW.
- k. Utilize the SOW and WBS in preparing the corresponding CDRL, Section L, Section M and other parts of the RFP/contract following DFARS.

3.8.3 Non-Complex SOW Development. It is essential to establish a SOW outline for non-complex acquisitions which do not lend themselves to utilization of a WBS.

- a. Define end items (line items) to be acquired, such as hardware, software, engineering analysis, software validation or simulation, etc.
- b. Establish the requirements which apply to each end item and, as a minimum, develop a bibliography as described in 3.8.2.e above.
- c. Determine what services or data will be needed to support each end item after delivery to the Government.
- d. Identify all participants (see 3.8.2.h)
- e. Prepare the SOW following the guidelines of this handbook.

4. DETAIL REQUIREMENTS

4.1 SOW Types. The acquisition process is structured in five logical phases separated by major decision points called milestones. Each milestone is an opportunity for a review to determine if the program should continue. The decision to enter the next phase or not is based on results obtained in the acquisition phase preceding that milestone. SOW type numbers are synonymous with the acquisition phase they support. Figure 6 relates the appropriate SOW to its acquisition phase.

4.2 Concept Exploration and Definition Phase (SOW Type 0). The objective of the Concept Exploration and Definition Phase is to define and identify alternative system design concepts which fulfill mission needs and program objectives. During this phase, technological advances, concept feasibility, schedules and costs are evaluated by the program manager in order to identify a viable solution to a military requirement. Because of the evolving nature of the desired product, the SOW used during this phase must be limited to an expression of the mission need objectives and goals. The precision with which operational goals or technical objectives can be defined during this phase will impact the Government's and the contractor's ability to estimate cost and risk. In the majority of early stage research programs, including preliminary explorations and studies, the work to be performed cannot be described precisely. When preliminary exploration and studies have indicated a high probability that the development is feasible a more definitive SOW can be drawn. Based on program needs, the contractor in this phase may develop a Type A system or system/segment specification for use by the Government in the solicitation for the next phase.

4.2.1 Elements of Information. Where preliminary studies involving systems analyses, preliminary cost effectiveness, or trade-off studies are to be contracted, there are certain distinctive elements of information to be included in the SOW. These can be included in either the introduction or background descriptions of the Scope in Section 1.

These areas are as follows:

a. *Statement of the problem(s)*. A brief description and background of the problem(s) to be solved, and a succinct discussion of the need giving rise to this requirement.

b. *System description*. A short functional description of the overall system. If practicable, a pictorial representation that will quickly orient the reader to the desired system and the proposed use should be considered for inclusion in this Section of the SOW.

c. *Major milestones*. A graphic display of major program milestones should be included in the background information.

| ACQUISITION SOW TYPE | ACQUISITION PHASE | SPECIFICATION TYPE | TYPICAL SOW OBJECTIVE | TYPICAL SOW TASKS | TYPICAL DATA OUTPUT |
|----------------------|--|--|--|---|---|
| 0 | Concept Exploration and Definition | None | Expresses objectives and goals and thresholds of a concept system to be designed to satisfy a mission requirement. | Conduct preliminary analyses; alternative conceptual designs; courses of development; functional flow diagrams; & exploratory trade-off studies. | Technical reports describing conclusions & rationale of studies & analyses; alternative conceptual system definitions & designs; & Type A specifications. |
| I | Demonstration and Validation | MIL-S-83490 MIL-STD-490 (Type A) Purchase Description | Defines processes to validate a potential system's ability to satisfy the mission requirement. | Define system type performance specifications; define critical design characteristics; proof critical technologies & processes; demonstrate advanced models; define Life cycles cost studies; & develop program & logistic plans. | Type B specification, system engineering plans, Logistic Support Analysis Records (LSAR) cost reports, Program Management Plan, Conceptual Design Drawings, design review data, & Risk Management Plan. |
| II | Engineering and Manufacturing Development | MIL-S-83490 MIL-STD-490 (Type B) Purchase Description | Addresses design, development, test & evaluation of a potential system's ability to satisfy mission requirement. | Develop contract specifications; finalize system specifications; implement program & CM plans; conduct cost, schedule, & performance trade-offs. | Type C specification; Developmental Design or Level III Drawings; updated LSARs; updated system engineering plans; test plans, procedures, & reports; design & cost data; & production plan. |
| III/IV | Production & Deployment/Operations & Support | MIL SPEC MIL-STD-490 MIL-STD-961 (Type C) | Defines requirements to produce approved system as a mission ready asset. | Produce & deliver/install system per specification & approved engineering changes. Prepare using command for delivery & turnover; provide interim support. Continue systems engineering & configuration management. Deliver logistic support. | Product Drawings; provisioning technical documentation; technical manuals; training course material; & other operational, maintenance & logistic support documentation. |
| V | Nonpersonal Services | None | Describes the work to be performed which is the finished product. | Explicitly state what work is to be performed in sufficient detail to minimize governmental involvement. | Technical report describing processes & results of the work performed. |

Figure 6. SOW Types

4.2.2 Requirements. The Section 3 paragraphs will establish what the contractor shall do, and may properly contain discussions of the following requirements and conditions:

a. *Component and subsystem relationships*. A functional flow diagram, explaining what is visualized as possible or practical at this time and showing the system and each associated subsystem (or major component).

b. *Alternative courses of development*. A summation of the alternatives for development as they are visualized at this time, pointing out the possible differences in operational effectiveness in terms of performance, reliability, maintainability and operability. The SOW should clearly indicate the basis of comparison, e.g., previous experience or extrapolations.

c. *Phasing*. Where the studies to be accomplished are divisible into time phases or into other separable areas of work. The SOW should spell out these requirements.

4.3 Demonstration and Validation (D&V) Phase (SOW Type I). The major efforts in this phase include defining the critical design characteristics and expected capabilities of the system and proofing the critical technologies and processes to be used in the system, and determining that adequate resources (people and funds) to support the program have been committed. A previously developed Type A Specification may be further supported by a Type B specification, in accordance with MIL-S-83490 and MIL-STD-490, for use in the Engineering and Manufacturing Development Phase. The SOW used in the D&V phase should provide a detailed description of the required development objectives and the efforts needed to achieve them. Three groups of tasks may be included in a D&V Phase SOW. These are system and program definition, defense material proofing, or prototype demonstrations of an Advance Development Model (ADM).

4.3.1 Detailed Requirements. The D&V Phase SOW should contain enough detail to enable the successful bidders to translate the program requirements into an effective development plan. It should delineate specific tasks for evolving the system requirements into system type specifications or system segment specifications. Results of proofing or prototyping must be assessed and the system performance requirements defined to the end-item level in a performance specification. Efforts include: systems engineering, fabrication of test hardware (if appropriate), practical trade-offs, cost trade-offs, risk assessment, program planning, and integrated logistics support (ILS). During this phase, planning for the Engineering and Manufacturing Development Phase SOW will normally be accomplished. A D&V Phase SOW identifies the requirements and rules to be followed in task performance. The contractor's response during the D&V Phase coupled with in-house planning will produce data to be used by the DoD manager in preparing a MIL-STD-490 performance specification for the Engineering and Manufacturing Development Phase. The manager can then draft a SOW which will include all nonspecification requirements for the phase.

4.4 Engineering and Manufacturing Development Phase (SOW Type II). This phase covers design, development, test and evaluation of the system or subsystem, based on a SOW developed during the latter part of the D&V Phase. During this phase, the selected contractor performs design, development, test and evaluation of the system based on the functional and allocated baselines, which are system definition products, and may prepare the production or Type C specification is prepared for use in the Production and Deployment Phase. The system includes the prime mission defense material and all the necessary and accompanying ILS. The intended Engineering and Manufacturing Development Phase output is a defense material configured system with its requisite production documentation. The producibility of the system is a critical factor to be evaluated. The plan to transition to production should be prepared by the contractor to define the techniques that will be used to reduce risk during the production phase. Because the system has progressed to the point that the contractor is ready to design and develop hardware, many of the generalized D&V Phase SOW technical descriptions have now been quantified and placed in the contract specification, and must be removed from the SOW. Test and Evaluation (T&E) conducted by the contractors and the DoD is also an essential activity of this phase. Technical and engineering problems, with related program risk assessments, will need to be continuously addressed during T&E with a view towards possible trade-offs between stated operational requirements, support cost goals, performance, and supportability criteria. The SOW should ensure that contractor system engineering management activities are oriented toward minimal needs, and further contain only those nonspecification tasks that must be fulfilled during this phase.

4.5 Production and Deployment Phase/Operations and Support (SOW Types III and IV). The fourth phase is the Production and Deployment Phase, during which the system developed in the previous phases is produced and installed and any training required for operational use is conducted. All tasks which were deferred until the Production Phase are addressed and action is initiated for their completion. These include efforts deferred in support areas such as, supply support (provisioning), technical publications and training. Systems engineering management will ensure on a continuing basis that the design is feasible and sound. Additionally, they will initiate, evaluate and integrate engineering changes throughout the Production Phase to provide the capability for continued support after the system is deployed. The evaluation of system Engineering Change Proposals (ECPs) and value engineering changes, and the preparation for turnover of system operation to the using service are important tasks to be accomplished during this phase. The need for continued system effectiveness and product assurance work as well as CM work will be based on the impact of engineering changes. Operation and Maintenance manuals, and supply support documents, are updated during this Phase and the finished system is tested and approved for DoD use.

4.5.1 Product Specifications. The product specification is the primary procurement control document used during the production phase to determine the product baseline, control design, and establish system performance. The content of the specifications is limited in accordance with MIL-STD-961, to requirements intended to control design and establish performance requirement

of the purchased product. The SOW should not conflict with the product specification. Typical SOW requirements which should be tailored to the minimal Production Phase needs are: ILS, CM, technical manuals and publications, training, quality program requirements, calibration and instrumentation, reliability, maintainability, human factors, safety, Planned Maintenance Subsystem (PMS) and other contractor provided services needed in conjunction with the production buy. Many of these areas have already been addressed during the development phases and should now be well defined and documented. Some SOW tasks are no longer required, while others require continued effort or the introduction of new tasks compatible with the Production Phase. As an example, the reliability program has been established and the plans have been approved. The Production Phase, however, requires continuation of the program to act on any technical changes introduced into the system design.

4.5.2 Examples. Figure 7 provides a standard SOW format, and Appendix F illustrates an example of a SOW. The example SOW is intentionally incomplete in the interest of brevity.

4.6 Non-personal Services (SOW Type V). The product of a Non-personal services SOW (Appendix G) is the result of some work task being performed. The requirements that establish the work must be defined in terms of work words and not product words. The need for non-personal services may occur during any of the life cycle phases or any other time a requirement is identified. If the work to be performed is painting a building, the task must define what is to be painted and to what standards, such as: kind of paint, number of coats, colors, basic structure and trim. The product of such a contract is obviously a building painted in the prescribed manner and completed by a certain time. If the SOW is prepared in this way, the contractor can be left entirely on his own to perform the job as long as he finishes the building on time, within cost, and uses the materials prescribed in the fashion set forth. This would be a proper Non-personal services contract. The Government is then left with the requirement to inspect the product and either accept or reject it based on the contractor's conformance to the prescribed work requirement. The wide variety of non-personal services requirements cause this type of contract to take on many forms. However, in all applications, two factors are important to ensure that the services purchased are indeed non-personal. These factors are: (a) the SOW must establish explicitly what work is to be done and require the delivery of a product other than periodic progress reports and (b) the contractor's employees must not be supervised by the Government during the execution of the work and production of the product. In this regard, the SOW must be explicit, inclusive and comprehensive in prescribing the work requirements. For a more complete discussion of a personal versus a non-personal services contract, refer to DFAR 237.104.

STATEMENT OF WORK FORMAT

(TYPE 0 thru TYPE V)

1. Scope. Include a statement about what this SOW covers. For Types 0, I & V, some background information may be helpful to clarify the needs of the procurement.

1.1 Background. Do not discuss work tasks in Section 1.

2. Applicable Documents. All documents invoked in the requirements section of the SOW must be listed in this section by document number and title. These documents may include Standards, Specifications and other reference documents needed to identify and clarify the work task or deliverable product. However, DOD and Departmental Instructions are provided to control in-house work effort and shall not be used in the SOW to control contractor effort. Also, any document listed in this section must be invoked and selectively tailored to meet minimal needs of the planned procurement in the requirements section.

2.1 Military specifications.

2.2 Military standards.

2.3 Other military documents.

2.4 Industry documents.

3. Requirements. The arrangement of technical tasks and subtasks within the Requirements section will be dictated by program requirements. If a WBS is being used in the program, tasks should be arranged in accordance with that WBS. It may be helpful to have a general task to orient the planning and use of the subsequent subtasks. The following outline is a generalization. Care should be exercised to scope the program tasks to meet only the minimal needs for the phase SOW or requirements.

3.1 General.

3.2 Detail tasks.

3.2.1 System engineering.

a. Technical studies - including life cycle costs.

b. System effectiveness planning, for example, reliability, maintainability, and human factors.

Figure 7. SOW FORMAT.

4.6.1 Product Definition. As the product or service becomes more involved and technical in nature, defining in adequate detail what is needed to enable a contractor to produce the product independently becomes more difficult. If the job is an analysis, the task must say precisely what is to be analyzed and the criteria for performing the analysis, including any particular elements to be considered. If some conclusion is to be drawn as a result of the analysis, be precise about what the DoD needs to obtain as a result of this analytic work. If it is important how or in what sequence the analysis is to be conducted, spell it out. Specify explicit needs, leaving nothing to the contractor's imagination.

4.6.2 Terminology. A frequent problem encountered in defining the tasks in a Type V SOW is to use the words: assist, as required, as necessary and as directed. Do not use any of these words. The following rationale for precluding their use is provided:

a. *Any*. "Any" is an ambiguous word. Writers may intend it to denote "plurality" and readers may interpret it to denote "oneness". Also, when "any" is used to describe the selection of items from a list, it's the reader who does the selecting, not the writer. Which items, and how many the reader selects are beyond the control of the writer.

b. *Assist*. Assist connotes personal services. It infers working side-by-side, being subject to supervision. The word is totally undefined in terms of identifying the work and its range and depth. Spell out explicitly what the contractor must do.

c. *As required*. The result of this approach is an undefined work condition. It has no expressed limitations. It places the Government in a position of not expressing its minimal needs. It could lead to a debatable condition concerning the contractor's compliance with the contract or order. The SOW must be declarative as to its minimal needs.

d. *As applicable/As necessary*. If the Government does not know what is necessary or applicable, it must not leave to the contractor the responsibility for determining the minimal needs of the contract. The SOW should forthrightly state the requirements so that the contractor can comply with the requirement using his best efforts and expertise to accomplish the tasks.

e. *As directed*. This condition, as a part of a work task in a SOW, connotes a personal services situation in which the contractor is placed under direct supervision. "When directed" may be used in conjunction with a task order contract to indicate that specific tasks may be initiated at various times during the period of contracted performance.

4.6.3 Word Usage. Another area of concern in establishing the SOW for Non-personal Services is the overburdened use of the words and phrases "support" and "engineering and technical services".

a. Support is an ambiguous term. Specify the specific type of support needed.

b. The terms "engineering and technical services" encompass a broad area of expertise. The SOW must state the minimal needs, even if it means broadening the work limitations to cover anticipated work tasks. For clarification, the SOW may include some examples of typical work to be done.

c. Perhaps one of the most vexing problems in contracting is the problem of loopholes. Contractors and inspectors go by the letter of the contract SOW. In one instance, an engineer intended to have a damaged roof edge repaired and repainted. He wrote "match existing", but did not specify "repaint". The contractors who did the work matched the existing metal flashing strip but refused to paint the new flashing. The inspector could only agree with the contractor, since the engineer had not adequately described what was intended. The writer and reviewers at all levels of review have a responsibility to ensure that loopholes do not exist in the final SOW.

4.6.4 Other documents. Unlike Type 0 through Type IV SOWs for defense material, departmental instructions or other policy documents may be referenced or invoked in the Type V SOW to define to a non-personal services contractor a work performance method. Departmental policies and procedures used to control similar in-house work effort must be thoroughly understood by the SOW writer and those rules defined for the contractor's guidance.

APPENDIX A

ACRONYMS

| | |
|-------|--|
| ADM | Advanced Development Model |
| AMSDL | Acquisition Management Systems and Data Requirements Control List |
| AP | Acquisition Plan |
| ASP | Acquisition Strategy Panel |
| CDRL | Contract Data Requirements List |
| CLIN | Contract Line Item Number |
| CM | Configuration Management |
| D&V | Demonstration and Validation |
| DAB | Defense Acquisition Board |
| DFARS | DoD Federal Acquisition Regulation Supplement |
| DID | Data Item Description |
| DoD | Department of Defense |
| ECP | Engineering Change Proposal |
| EDM | Engineering Development Model |
| EMC | Electromagnetic Compatibility |
| FAR | Federal Acquisition Regulation |
| FMS | Foreign Military Sales |
| ILS | Integrated Logistics Support |
| IPS | Integrated Program Summary |
| LSA | Logistic Support Analysis |
| LSAR | Logistics Support Analysis Records |
| MTBF | Mean-Time-Between-Failure |
| MTTR | Mean-Time-To-Repair |
| NDI | Non-Development Item |
| ORD | Operational Requirement Document |
| PMS | Planned Maintenance Subsystem |
| POM | Planning Objective Memorandum |
| R&D | Research and Development |
| RDT&E | Research, Development, Test, and Evaluation |
| RFP | Request for Proposal |
| SOW | Statement Of Work |
| SPEC | Specification |
| STD | Standard |
| T&E | Test and Evaluation |
| WBS | Work Breakdown Structure |

APPENDIX B

WORK WORDS/PRODUCT WORDS

Select the key word that properly expresses the degree of contractor involvement. Specify what is to be done and the total nature of the work requirement. The word list provided in this appendix is not complete but is provided to stimulate the thinking of the SOW writer by pointing out the critical differences in the meaning of work words versus the product words identified in connection with deliverable data.

Work words. When selecting the key work word that properly expresses contractor's involvement, the SOW writer must define explicitly the total nature of the work requirement in terms of what is to be done. In some cases, the "why" or the application of the results of the performed work may be stated if it clarifies the requirement. The following sample list contains words which have the inherent value of work. This list is offered as a reminder of the various shades of meaning conveyed by choice of words.

| | |
|---------------|--|
| analyze | (solve by analysis) |
| annotate | (provide with comments) |
| ascertain | (find out with certainty) |
| attend | (be present at) |
| audit | (officially examine) |
| build | (make by putting together) |
| calculate | (find out by computation) |
| consider | (think about, to decide) |
| construct | (put together; build) |
| control | (direct; regulate) |
| contribute | (give along with others) |
| compare | (find out likeness or differences) |
| create | (cause to be; make) |
| determine | (resolve; settle; decide) |
| differentiate | (make a distinction between) |
| develop | (bring into being or activity) |
| define | (make clear; settle the limits) |
| design | (perform an original act) |
| evolve | (develop gradually, work out) |
| examine | (look at closely; test quality of) |
| explore | (examine for discovery) |
| extract | (take out; deduce, select) |
| erect | (put together; set upright) |
| establish | (set up; settle; prove beyond dispute) |
| estimate | (approximate an opinion of) |
| evaluate | (find or fix the value of) |
| fabricate | (build; manufacture, invent) |
| form | (give shape to; establish) |

APPENDIX B

WORK WORDS/PRODUCT WORDS - Continued

| | |
|-------------|---|
| formulate | (to put together add express) |
| generate | (produce, cause to be) |
| identify | (to show or to find) |
| implement | (to carry out, put into practice) |
| install | (place; put into position) |
| inspect | (examine carefully or officially) |
| institute | (set up; establish, begin) |
| interpret | (explain the meaning of) |
| inquire | (ask, make a search of) |
| integrate | (to add parts to make whole) |
| investigate | (search into; examine closely) |
| judge | (decide; form an estimate of) |
| make | (cause to come into being) |
| maintain | (to keep in an existing state, to continue in, carry on) |
| manufacture | (fabricate from raw materials) |
| modify | (to change, alter) |
| monitor | (to watch or observe) |
| notice | (comment upon, review) |
| observe | (inspect, watch) |
| originate | (initiate, to give rise to) |
| organize | (integrate, arrange in a coherent unit) |
| perform | (do, carry out, accomplish) |
| plan | (devise a scheme for doing, making, arranging activities to achieve objectives) |
| probe | (investigate thoroughly) |
| produce | (give birth or rise to) |
| pursue | (seek, obtain or accomplish) |
| reason | (think, influence another's actions) |
| resolve | (reduce by analysis, clear up) |
| record | (set down in writing or act of electronic reproduction of communications) |
| recommend | (advise, attract favor of) |
| review | (inspection, examination or evaluation) |
| revise | (to correct, improve) |
| study | (careful examination or analysis) |
| seek | (try to discover; make an attempt) |
| search | (examine to find something) |
| scan | (look through hastily, examine intently) |
| screen | (to separate, present, or shield) |
| solve | (find an answer) |
| test | (evaluate, examine) |
| trace | (to copy or find by searching) |
| track | (observe or plot the path of) |
| update | (modernize, make current) |

APPENDIX B

WORK WORDS/PRODUCT WORDS - Continued

PRODUCT WORD LIST. Although Nonpersonal Services contracts may not result in data as a deliverable product, a large portion do. This list of product words is provided to assist in identifying those products.

| | |
|-------------------|-----------------|
| agenda | lists |
| audio visual aids | manuals |
| books | manuscript |
| cards | pamphlets |
| certificates | plans |
| charts | procedures |
| data | publications |
| decks | recommendations |
| disc-magnetic | records |
| documentation | recordings |
| drafts | reproducible |
| drawings | reports |
| drums-magnetic | requests |
| equipment | sheets |
| files | specifications |
| findings | standards |
| forms | systems |
| guides | tapes |
| graphics | transparencies |
| handbooks | |
| illustrations | |
| materials | |
| minutes | |
| outlines | |
| proposals | |

APPENDIX C

PHRASES HAVING MULTIPLE MEANINGS

This list of phrases having multiple meanings is provided as an example of those to be avoided.

To the satisfaction of the contracting officer,

As determined by the contracting officer,

In accordance with instructions of the contracting officer,

As directed by the contracting officer,

In the opinion of the contracting officer,

In the judgement of the contracting officer,

Unless otherwise directed by the contracting officer,

To furnish if requested by the contracting officer,

All reasonable requests of the contracting officer shall be compiled with,

Photographs shall be taken when and where directed by the contracting officer

In strict accordance with,

In accordance with best commercial practice,

In accordance with best modern standard practice

In accordance with the best engineering practice,

Workmanship shall be of the highest quality,

Workmanship shall be of the highest grade,

Accurate workmanship

Securely mounted,

Installed in a neat and workmanlike manner,

Skillfully fitted,

APPENDIX C

PHRASES HAVING MULTIPLE MEANINGS - Continued

Properly connected,

Properly assembled,

Good working order,

Good materials,

In accordance with applicable published specifications,

Products of a recognized reputable manufacturer,

Tests will be made unless waived,

Materials shall be of the highest grade, free from defects or imperfections, and of grades approved by the contracting officer

Kinks and bends may be cause for rejection,

Carefully performed,

Neatly finished,

Metal parts shall be cleaned before painting,

Suitably housed,

Smooth surfaces,

Pleasing lines,

Of an approved type,

Of standard type,

Any phrases referring to "The Government inspector"

APPENDIX D

SOW CASE STUDY

The intent of this appendix is to demonstrate the importance of clarity in preparing the SOW. Extracts from a SOW for the procurement of an electronics surveillance system are provided to illustrate a well written SOW. Factors that improved the use of the SOW are noted in the margin. The procuring activity indicated that no significant legal or contractual issues surfaced related to the SOW, largely due to the program office's attention to detail and by stating clear and concise requirements.

3.0 REQUIREMENTS

3.1 Detailed Design and Manufacturing Analysis

The contractor shall perform a detailed evaluation of all aspects of _____

_____ subsystem. Components of the subsystem shall include, _____

_____. The contractor shall review, analyze and document all design and manufacturing approaches to meet the performance requirements and characteristics as documented in the specification.

The contractor shall define and prioritize critical design and manufacturing issues. The critical issue areas may include but are not limited to:

- a) Issue I
- b) Issue II
- c) Issue III

The contractor shall identify the options and alternatives available for implementation in each critical issue area. The contractor shall also document the inputs, procedures, and results of the analysis in each critical issue area and shall provide specific recommendations concerning subsystem design and manufacturing.

WORK TO BE TO PERFORMED IS SPECIFIED. (See para. 3.6.3)*

ISSUES ARE IDENTIFIED.
(See para. 3.6.3)*

DETAILS OF ISSUES SPECIFIED.
(See para. 3.6.3)*

* Referenced paragraph is in this handbook

APPENDIX D

SOW CASE STUDY - Continued

3.1.1 Support and Test Equipment

The contractor shall identify the support and test equipment and special tools required to support the _____

_____ IAW MIL-STD-1364. General Purpose electronic Test Equipment (GPETE) shall be selected to the extent possible. System peculiar support and test equipment shall be supplied to the appropriate maintenance level activities to the extent necessary to satisfy maintainability and maintenance planning requirements as determined by _____ System peculiar support and test equipment shall include equipment which is unique to the _____ Subsystem and is required to check out, maintain and repair the system while it is not directly engaged in the performance of its mission. This shall include equipment tools used to service, repair, disassemble, assemble, check out, inspect and otherwise maintain the tow cable/towed array system, and any special test equipment required for the telemetry/receiver/interface electronics. System peculiar equipment shall be provided in quantities to be determined by _____ for each maintenance level, and shall include, but not necessarily be limited to, the following:

- a. Special tool I
- b. Special tool II
- c. Special tool III

CONTROLLING STANDARD AND
RELATED DETAILS SPECIFIED.
(See para. 3.6.2)*

CONDITIONS ON SELECTING TEST
EQUIPMENT SPECIFIED.
(See para. 3.6.3)*

* Referenced paragraph is in this handbook.

APPENDIX D

SOW CASE STUDY - Continued

3.1.2 Logistic Support Analysis

The contractor shall perform a Logistic Support Analysis (LSA) in accordance with MIL-STD-1388-1A to the extent as tailored below. The purpose of the LSA is to ensure integration of supportability concurrent with other design aspects and to ensure that program availability requirements are met in the most effective manner. The contractor shall accomplish the following tasks of MIL-STD-1388-1A.

- a. Task 101 - Development of an Early Logistic Support Analysis Strategy
- b. Task 201 - Comparative Analysis
Subtasks 203.2.2, 203.2.4, 203.2.5, 203.2.7, 203.2.8 applies
- c. (Other applicable 300 and 400 series tasks.)

NOTE TAILORING OF MIL-STD-1388-1A AND RELATED TASKS.
(See para. 3.6.3)*

3.1.3 Quality Program Planning

The contractor shall plan the quality program, tailoring the program elements and tasks to the requirements of the contract specification and the SOW. Program elements and task planning shall be determined which shall implement the elements in MIL-Q-9858 for application to this contract as follows:

- a. Establishment of closed loop quality assurance reporting and analysis procedures for incoming and in-process inspection defect data.
- b. (Specify other program

PROGRAM ELEMENTS EQUATE TO MIL-Q-9858 REQUIREMENTS
(See para 3.6.3)*

* Referenced paragraph is in

APPENDIX E

EDUCATION COURSES AND AUTOMATED TOOLS

There are several education courses and automated tools within the government to assist in SOW preparation.

a. Education Courses

Defense Systems Management College (DSMC) Program Management - Highlights the SOW and its relationship to special project office objectives. COMMERCIAL (703) 664-2152/4777 or AUTOVON 354-2152/4777.

DSMC Systems Acquisition for Contract Personnel - Provides contracting personnel with the fundamental knowledge and understanding of systems acquisition from requirement definition to field deployment. All phases of a system's life cycle are analyzed to include Statement of Work and Specification practices. COMMERCIAL (703) 664-2152/4777 or AUTOVON 354-2152/4777.

Air Force Institute of Technology (AFIT) SYS 100 - 30-hour introduction to general program management responsibilities with a discussion of the SOW and its purpose. COMMERCIAL (513) 664-255-3355 or AUTOVON 785-3355.

AFIT SYS 200 - 3-week course with 12 hours on basic SOW preparation skills including practical exercises. COMMERCIAL (513) 664-255-3355 or AUTOVON 785-3355.

b. Automated Tools

Computer Generated Acquisition Documentation System (CGADS) - Located at the Electronic Systems Division, Hanscom AFB Mass. It uses a checklist to suggest policies, tasks and military standards to address in your SOW. Point of contact is COMMERCIAL 617-377-7575, AUTOVON 478-7575.

Systematic Acquisition Requirements Tailoring & Scheduling (SMARTS) - Located at Navy, Naval Sea Systems Command (NAVSEA), in Arlington, Va. It ties together modularized acquisition documents including the SOW and CDRL by cross referencing. Point of contact is COMMERCIAL (703) 602-7946 or AUTOVON 332-7946.

Computer-Aided Acquisition and Logistics Management System (CALMS) - Located at Naval Sea Systems Command, in Arlington, VA. It is a program comprised of four automated decision support tool modules, including a SOW/CDRL Module which utilizes user answers to "expert questions" to generate draft SOW/CDRL packages which the user can further tailor into a final contractual document. Point of contact is NAVSEA 04PA2. COMMERCIAL (703) 692-1404 or AUTOVON 332-1404.

APPENDIX F

EXAMPLE SOW (TYPE 0 thru TYPE IV)

EXAMPLE SOW

(TYPE 0 thru TYPE IV)

1.0 SCOPE. This Statement of Work (SOW) defines the effort required for the design, engineering development, fabrication, and test of an Advanced Development Model (ADM) of the _____ System for the Demonstration and Validation Phase. It includes the associated program management, human engineering, and logistic support planning requirements.

1.1 Background. The _____ program has been initiated to design, develop, produce, and deploy an improved _____ system that will fulfill the _____ requirements as specified in Operational Requirement No. _____. The _____ System will replace the XYZ System, and will significantly improve _____ capabilities. The _____ System specification for the ADM was developed during the Concept Exploration Phase conducted over the past two years. Upon successful testing and acceptance of the ADM developed during this D&V phase, it is intended to obtain Department of Defense approval (Milestone II) to proceed to the Engineering and Manufacturing Development Phase and to competitively procure Engineering Development Models (EDMs) using specification, drawings, and program plans developed under this SOW.

2.0 APPLICABLE DOCUMENTS. The following documents are applicable to this Statement of Work and attached appendices to the extent specified herein.

2.1 Military Specification.

| | |
|--------------|--|
| MIL-H-468558 | Human Engineering Requirements for Military Systems, Equipment, and Facilities |
| MIL-S-83490 | Specifications, Types and Forms |
| | |
| | |

2.2 Military Standards

| | |
|-----------------|---|
| MIL-STD-490A | Specification Practices |
| MIL-STD-1388-1A | Logistic Support Analysis |
| MIL-STD-1521B | Technical Reviews and Audits |
| MIL-T-31000 | Drawings, Engineering and Associated List |

APPENDIX F

EXAMPLE SOW (TYPE 0 thru TYPE IV) - Continued

2.3 Availability of Documents. Copies of specification, standards and handbooks listed above are available from the DOD Single Stock Point. Requests for copies should be addressed to:

3.0 REQUIREMENTS.

3.1 General. The work required by this contract shall be performed in accordance with _____ System Specification (#) and this Statement of Work (SOW).

The contractor shall design, develop, fabricate, and test an Advanced Development Model as listed in Section C of this contract to meet the performance criteria specified by _____ System Specification (#) and in accordance with the detailed requirements in paragraph 3.2.1 below.

The contractor shall provide program management, human engineering management, and logistic support planning in accordance with the detail requirements of 3.2.2 below.

In the event of a conflict between this SOW, the specification, the _____, etc., the _____ shall take precedence.

3.2 DETAIL TASKS

3.2.1 Design, Engineering, Fabrication and Test. (DI-T-3714)

3.2.1.1 Design and Engineering. The contractor shall design and develop an ADM of the _____ System to meet the specification and criteria of _____ System Specification (#) utilizing engineering trade-offs between performance, reliability, maintainability, supportability, producibility, and life cycle costs. The _____ System design shall include the equipment performance and physical characteristics, subsystem component location, materials, the software program design elements of a top-down design, basic module description, and interface design. (DI-T-3715)

APPENDIX F

EXAMPLE SOW (TYPE 0 thru TYPE IV) - Continued

3.2. Design Analysis. The contractor shall conduct a detail design analysis of the selected design. Detailed physical and performance design characteristics shall be specifically identified including the engineering decision process for using one methodology over another. Design documentation shall include discussion of alternatives and the ramifications thereof, risk assessments, and trade-offs made. (DI-T-3716)

3.2.1.3 Preliminary Design Review (PDR) and Design Formalization. The contractor shall conduct a Preliminary Design Review 180 days after contract award. The PDR shall be conducted in accordance with MIL-STD-1521B, Appendix D, paragraph 40.1. Informal design reviews may be held at times agreed to by the Government and the Contractor. (DI-T-3717)

As a result of the design analysis conducted in paragraph 3.2. and the PDR in 3.2.1.3, the contractor shall finalize and formalize the design for fabrication. Written procuring activity approval of the design is required before the contractor is authorized to proceed with ADM fabrication. (DI-T-3718)

3.2.1.4 Fabrication. The contractor shall fabricate two identical ADMs in accordance with the contractor's final approved design and utilize standard manufacturing processes. One ADM shall be used for potentially destructive environmental tests and the other ADM for performance tests. (DI-T-3719)

During fabrication, the contractor shall correct and document any design characteristics that are found to inhibit or make fabrication unnecessarily costly but that do not otherwise alter performance or system effectiveness characteristics. (DI-T-3720)

3.2.1.5 Test and Evaluation. The contractor shall conduct and evaluate the results of environmental and performance tests on the ADMs to demonstrate full compliance of all equipment and software with _____ System Specification ____ (#) _____. The tests shall be conducted in accordance with the developmental test plan developed by the contractor and approved by the Government. The tests may be conducted at the contractor's facilities or at an independent laboratory or commercial testing facility. (DI-T-3721)

APPENDIX F

EXAMPLE SOW (TYPE 0 thru TYPE IV) - Continued

3.2.1.6 Critical Design Review (CDR). The contractor shall conduct a Critical Design Review 30 days after completion of the developmental tests. At the CDR, the contractor shall formally report the results of the developmental tests, address design changes made during the fabrication process, and recommend design changes as a result of the developmental tests including trade-off impacts. The contractor shall incorporate all design changes approved during the CDR into the final design drawings and specifications prior to delivery to the Government. In addition, the contractor shall prepare Type C product specifications in accordance with MIL-S-83490 and MIL-STD-490A and Engineering Drawings in accordance with MIL-T-31000. (DI-T-3722)

3.2.2 Program Planning.

3.2.2.1 Program Management. The contractor shall establish and maintain management operations in accordance with MIL-STD-499A that shall include the following areas: (DI-T-3723)

- (a) Program Planning and Control
- (b) Subcontractor Control
- (c) Financial Management
- (d) Data Management
- (e) Management and Accountability for Government Furnished Equipment, Material or Information.
- (f) Risk Management

The contractor shall develop and implement a Management Program that clearly defines how the _____ Development Project will be managed and controlled. A task matrix keyed to the Contract Work Breakdown Structure (CWBS) shall be developed in sufficient detail to identify Contractor and subcontractor responsibilities. The Contractor shall report progress in a manner that continuously affords the government visibility into the Contractor's progress. (DI-T-3724)

The contractor shall establish and implement a program management office function to manage all technical performance, reliability, maintainability, ILS, cost, schedule, and data delivery requirements of the contract. (DI-T-3725)

APPENDIX F

EXAMPLE SOW (TYPE 0 thru TYPE IV) - Continued

3.2.2.2 Human Engineering Program. The contractor shall develop and implement a Human Engineering Program Plan (HEPP) in accordance with MIL-H-46855B to ensure that appropriate studies are performed and that human engineering criteria are applied to subsystem hardware and computer software design. Representative human engineering demonstrations shall be included in the contractor's developmental test plan. (DI-T-3726)

3.2.2.3 Logistic Support Planning. The contractor shall implement an ILS program to ensure that supportability design criteria and characteristics are considered and incorporated into the design consistent with the trade-off studies and that meet the operational availability requirements of _____ System Specification ____ (#) _____. The ILS program shall use a Logistic Support Analysis (LSA) in accordance with MIL-STD-1388-1A as the principal analytic effort within the design process. The following LSA tasks of MIL-STD-1388-1A shall be performed: Tasks 202, 203 (except 203.2.7 and 203.2.8), and 205 (except 205.2.4). (DI-T-3727)

APPENDIX G

EXAMPLE TYPE V SOW

1.0 SCOPE. This SOW covers systems engineering, technical and management support services to the _____ Program Office. This support encompasses engineering analysis and recommendations for technical, logistical and life cycle support for _____ system.

2.0 APPLICABLE DOCUMENTS.

3.0 REQUIREMENTS.

3.1 PRODUCTION SUPPORT.

3.1.1 Conduct independent review of _____ production programs to identify requirements consistent with directives governing the acquisition of system and equipment. (DI-T-3714)

3. Using acquisition plans, existing hardware contracts, and inherent leadtime items, construct schedules for inclusion in documentation for weapon system and equipment acquisitions. (DI-T-3715)

3.1.3 Based on production program schedules as well as weapon system configurations, formulate technical documentation for these programs, itemizing all supplies, data and services to be obtained. (DI-T-3716)

3.1.4 Provide impact statements when deviations or changes occur and alternative recommendations when required to maintain individual program production integrity. (DI-T-3717)

3.1.5 Identify, compile, and utilize available information, update and input data for manual or automated production scheduling information systems, prepare government production reports germane to maintaining weapons system production status and inventory. (DI-T-3718)

3.1.6 Prepare production documentation for input into the applicable Management Information System (MIS). (DI-T-3719)

3.1.7 Prepare recommendation for identifying project data to be entered into existing Automatic Data Processing (ADP) programs. When data system deficiencies are discovered, provide recommendations for solutions. (DI-T-3720)

3.2 FMS SUPPORT.

3.2.1 Compare actual deliveries with contract schedules for Navy, Air Force and Foreign Military Sales (FMS). (DI-T-3721)

APPENDIX G

EXAMPLE TYPE V SOW - Continued

3.2.2 Track components and deliverable end items, and compile monthly acceptance reports and quarterly production reports. Consolidate delivery schedules by fiscal year, weapons, components, support equipment and manufacturer. (DI-T-3722)

3.2.3 Compare schedule with industrial capacities and weapon station buildup capabilities and identify shortcomings and problem areas in meeting these requirements. (DI-T-3723)

3.2.4 Correlate consignment instructions, acceptance reports and production/weapon build-up capabilities. (DI-T-3724)

3.2.5 Maintain and track material inspection receiving reports status reports of system components and support equipment. (DI-T-3725)

3.3 USAF SUPPORT.

3.3.1 Identify unique USAF requirements for the system, its components and associated equipment, based on USAF production planning and production support requirements. (DI-T-3726)

3.3.2 Compare current USAF acquisition plans and project directive with USN delivery and performance requirements to identify firm and provisioned requirements by component and associated support equipment. (DI-T-3727)

3.3.3 Determine the compatibility of requirements, military specifications and engineering documentation with USN standard and specifications. (DI-T-3728)

3.3.4 Provide recommendations to incorporate USAF stated requirements into the overall USN program schedules. Correlate and maintain the status of USAF monthly status reports thereof. (DI-T-3729)

Custodians:

Army - CR
Navy - EC
Air Force - 90

Review activities:

Army - AT
Navy - SH, AS, MC
Air Force - 11, 13

User Activities:

Army - SC
Navy - YD

Preparing activity:

NAVY-EC
(Project Number MISC-0132)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER
MIL-HDBK-245C

2. DOCUMENT DATE (YYMMDD)
10 SEPTEMBER 1991

3. DOCUMENT TITLE

PREPARATION OF STATEMENT OF WORK (SOW)

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)
(1) Commercial
(2) AUTOVON
(if applicable)

7. DATE SUBMITTED
(YYMMDD)

8. PREPARING ACTIVITY

a. NAME
COMMANDER
SPACE AND NAVAL WARFARE
SYSTEM COMMAND (CODE 211C)

b. TELEPHONE (Include Area Code)
(1) Commercial
(2) AUTOVON
(703) 602-3535 332-3535

c. ADDRESS (Include Zip Code)
WASHINGTON, DC 20363-5100

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
Defense Quality and Standardization Office
5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466
Telephone (703) 756-2340 AUTOVON 289-2340